REMARKS/ARGUMENTS

Claims 1-25 remain in this application. Claim 23 has been amended. Claims 1-9 and 17-22 had been previously withdrawn as a result of the restriction requirement.

Claims 10-16 and 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent Publication 2003/0180602 (Finn).

Claim 10 is an independent claim. It calls for a solid oxide electrode/electrolyte assembly that includes a thin electrolyte sheet of varied thickness of an average electrolyte sheet thickness between 3 micrometers and 30 micrometers, wherein the electrolyte sheet has a thickness variation of at least 2 micrometers.

The Office Action directed Applicants to paragraphs 00175 and 0177 of the Finn reference and stated that "Finn teaches a solid oxide fuel cell with a textured electrolyte made with yttria –stabilized zirconia ceramic. The surface has a plurality of protrusions having a height less than 5% the average thickness of the electrolyte. The surface roughness is 0.5 to 2.5 microns, which gives an average electrolyte thickness of 10-50 microns". Applicants respectfully disagree with the conclusion that the Finn reference anticipates claim 10 for the following reasons:

Applicants claimed that "electrolyte sheet has a thickness variation of at least 2 micrometers". Fin Reference discloses that their device has a plurality of protrusions having a height less than 5% and preferably less than 1% of the average thickness of the electrolyte. Thus, even if these protrusions were as small as 2 microns, as claimed by the applicants, and even if the thickness of the protrusions was 5% of the average thickness of the electrolyte, the average thickness of the electrolyte would be 40 microns, much larger than the maximum average electrolyte thickness claimed by the applicants. If, however, the thickness of the protrusions was 1% of the average

thickness of the electrolyte, the average thickness of the electrolyte would be 200 microns, again much larger than the maximum average electrolyte thickness claimed by the applicants.

Accordingly claim 10 is not anticipated by the Finn reference. Claims 11-16 and 25 depend from claim 16 as their base claim and, therefore, explicitly incorporate the language of claim 10. Therefore, claims 11-16 and 25 are also not anticipated by the Finn reference.

Claim 23 now specifies that the solid oxide electrode/electrolyte assembly that includes a thin electrolyte sheet of varied thickness of an average electrolyte sheet thickness between 3 micrometers and 30 micrometers and thickness variation of at least 0.5 micrometers and ohmic resistance of no more than 0.5 ohm/cm^2. The ohmic resistance of the electrolyte sheet is described, for example, in paragraph 0036 of the Applicant's specification and does not constitute new matter. This feature is not disclosed by the Finn reference. This feature imposes additional constrains on electrolyte thickness and/or composition and is not even taught or implied by the Finn reference.

Claim 24 depends from claim 23 as its base claim and, therefore, explicitly incorporates the language of claim 23. Therefore, claim 24 is not anticipated by the Finn reference.

Claims 10-16 are rejected under 35 U.S.C. 103(a as being unpatentable over US Patent Publication 2001/0044043 (Badding) in view of US Patent 4,272,353 (Lawrance).

Applicants claim a solid oxide electrode/electrolyte cell assembly.

US Patent Publication US2001/0044043 describes solid assembly utilizing substantially planar, smooth electrolyte sheet with an additional, optional roughened interface surface

layers 2 (see paragraph 0061). Thus, there is no surface thickness variation. Furthermore, assuming arguendo that the Badding reference discloses varying sheet thickness, it still does not disclose the range of thickness variations.

The Lawrence reference is a reference from non analogous art. It is not directed to solid oxide fuel cell devices. It is directed to polymer electrolytes. Accordingly, it is not a proper art to be cited for obviousness purposes.

The Lawrence reference also does not teach, or suggest that the disclosed method is applicable to solid oxide electrode/electrolyte assemblies. Absent such suggestion in the cited references themselves, applicants claims are not obvious over the combination of the two cited references.

Furthermore, a polymer electrolyte can not be used in solid oxide fuel cell (SOFC) devices. A polymer electrolyte is a proton exchange membrane and the technology associated with the polymer proton exchange electrolytes is not generally applicable to fuel oxide fuel cells. For example, a polymer electrolyte is designed to be operated at temperatures below 100^0C and will burn at the solid oxide fuel cell operating temperatures (over 600^0C). Furthermore, the mechanism for bonding between the polymer membrane and the anodes/cathodes is fundamentally different from that of SOFC electrolyte sheet and its associate anodes/cathodes. So, naturally, one knowledgeable in the art of SOFC would not expect solutions to the SOFC problems in the area of proton exchange electrolytic membranes.

Accordingly, Claims 10-16 are rejected under 35 U.S.C. 103 (as being unpatentable over US Patent Publication 2001/0044043 (Badding) in view of US Patent 4,272,353 (Lawrance).

Conclusion

Based on the above amendments, remarks, and papers of records, applicant believes the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Applicant believes that no extension of time is necessary to make this Reply timely. Should applicant be in error, applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

Please direct any questions or comments to Svetlana Z. Short at 607-974-0412.

Respectfully submitted,

DATE: 6/30/05

Svetlana Short

Svetlana Z. Short
Attorney for Assignee
Registration Number: 34,432
Corning Incorporated
SP-TI-03-1
Corning, NY 14831
Phone: 607-974-0412